

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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TITLE: ORTHODONTIC WIRE AND METHOD FOR MAKING SAME

Preliminary Amendment: CLAIM AMENDMENTS

1. (Currently amended) Orthodontic wire, in association with attachments bonded on ~~the~~ teeth, to correct position anomalies thereof, ~~made of~~ comprising:

a material having high mechanical performances and very low friction coefficient on said attachments, ~~characterized in that~~ said material is being defined by a basic structure ~~made comprised~~ of a titanium-molybdenum alloy comprising, in ~~its~~ an outer surface layer thereof, titanium nitrides of the type TiN, Ti<sub>2</sub>N, free of titanium oxide.

2. (Currently amended) Method for making a metallic wire according to claim 1, ~~characterized in that, in order to form the~~ said method comprising the steps of:

forming titanium nitrides of ~~the~~ type TiN, Ti<sub>2</sub>N in ~~the~~ an external superficial layer of ~~the~~ a titanium-molybdenum alloy,

performing a treatment of superficial implantation of N<sup>+</sup> and N<sup>++</sup> ions ~~is performed~~,  
and

working in an enclosure under vacuum, at a temperature lower than 450°C.

3. (Currently amended) Method according to claim 2, ~~characterized in that the treatment wherein said step of performing the treatment of~~ superficial ionic implantation ~~of the titanium-molybdenum alloy~~ is performed in two consecutive phases.

4. (Currently amended) Method according to claim 3, ~~characterized in that the~~ further comprising the steps of:

first submitting titanium-molybdenum alloy ~~is first submitted~~ to a phase of depassivation by non-reactive cold plasma by introducing an inert gas yet progressively increasing the temperature, then

submitting to a phase of nitriding by cold plasma by introducing a mixture of an inert gas and nitrogen.

5. (Currently amended) Method according to claim 4, ~~characterized in that,~~ wherein said step of performing treatment during the two phases of the treatment of superficial implantation of  $N^+$  and  $N^{++}$  ions, said inert gas is comprised of argon ~~is used as inert gas~~.

6. (Currently amended) Method according to ~~any of claims 4 or 5,~~ characterized in that Claim 4, wherein during the nitriding phase, forming nitrides step further comprises:

using proportions of inert gas and nitrogen that are used are adapted to the volume of the an enclosure in which the phase said step takes place, and

comprising enough nitrogen to permit its implantation thereof and enough argon to dissociate the nitrogen.

7. (Currently amended) Method according to ~~one of claims 4 through 6,~~ characterized in that the Claim 4, further comprising:

submitting a titanium-molybdenum alloy ~~is submitted~~ to the depassivation phase for about 45 minutes, then to the nitriding phase for about 200 minutes.

8. (Currently amended) Method according to ~~any of claims 2 through 7,~~ characterized in that the Claim 2, said step of performing treatment of superficial ionic implantation of the titanium-molybdenum alloy is completed by a slow cooling phase.